

Amyotrophic Lateral Sclerosis viewed from MRI

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Introduction: Amyotrophic lateral sclerosis (ALS) is an uncommon illness, it is caused by motor neuron degeneration, upper, lower and bulbar muscles are affected. The diagnostic is based in Scorial criteria. Some research also report degeneration in no motor structures of the brain.

Objective: Describe Image techniques findings in ALS diagnosis.

Method: During January 2016 to January 2018, twenty patients with ALS diagnosis and twenty health subjects were evaluated. 3T MRI image were obtained from the patients and from the health subjects. Post- processing MRI techniques like cortical thickness, voxel based morphometric, diffusion techniques and cortico-spinal tract and corpus callosum tractography were applied at different levels of the brain structures. Also, cortical thickness was evaluated.

Results: Cortical thickness was reduced in ALS patients in comparison with health control group. Fractional Anisotropy (FA) was reduced in ALS group in comparison with health group, more significant at cortex, internal capsule and corpus callosum. Fibers number of corticospinal tract and corpus

callosum were diminished in ALS group in relation to health group.

Also grey and white matter were reduce in ALS group, in areas such as: cingulate gyrus (anterior and medium portion), anterior portion of occipital lobe, left caudate and putamen nucleus, right claustrum nucleus, lower and medium temporal gyrus bilateral, left precentral and postcentral gyrus, corpus callosum (medium and posterior portion), corticospinal tract (at midbrain and pons), bilateral internal capsule (medium and posterior third), bilateral optical radiation, bilateral lower longitudinal fascicle, bilateral hippocampal fimbriae, bilateral radiated corona and pontocerebellar fibers.

FA abnormality in corticospinal tract at cortex, internal capsule, brainstem and corpus callosum was in correlation with clinic (ALSFRS-R) scale and neurophysiologic abnormalities.

Cortical thickness was diminish in ALS group of patients in relation with health group.

Conclusions: MRI methods show abnormalities in motor and not motor structures of brain in ALS patients.

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